



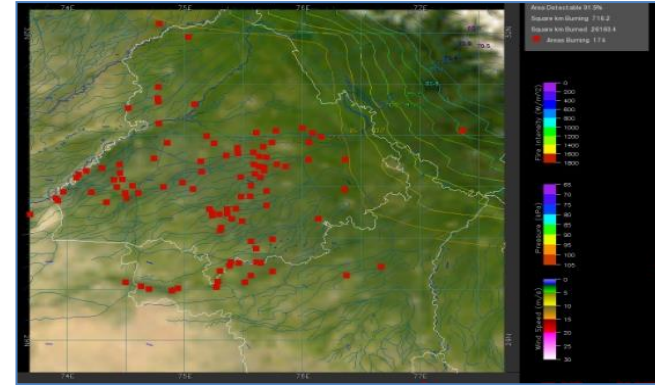
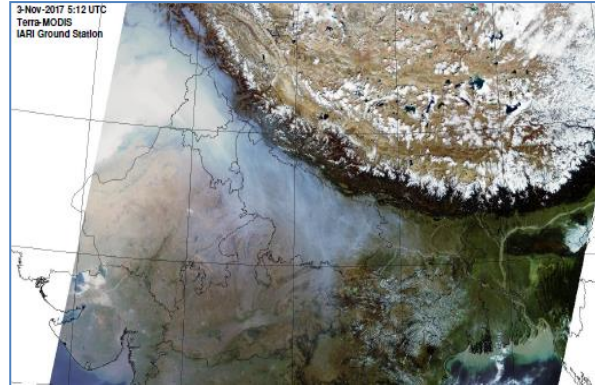
**Bulletin
No. 55**

**Events Date:
25-May-2023**

**Issued on:
25-May-2023**



MONITORING WHEAT RESIDUE BURNING IN INDIA USING SATELLITE REMOTE SENSING DURING 2023



Prepared by:

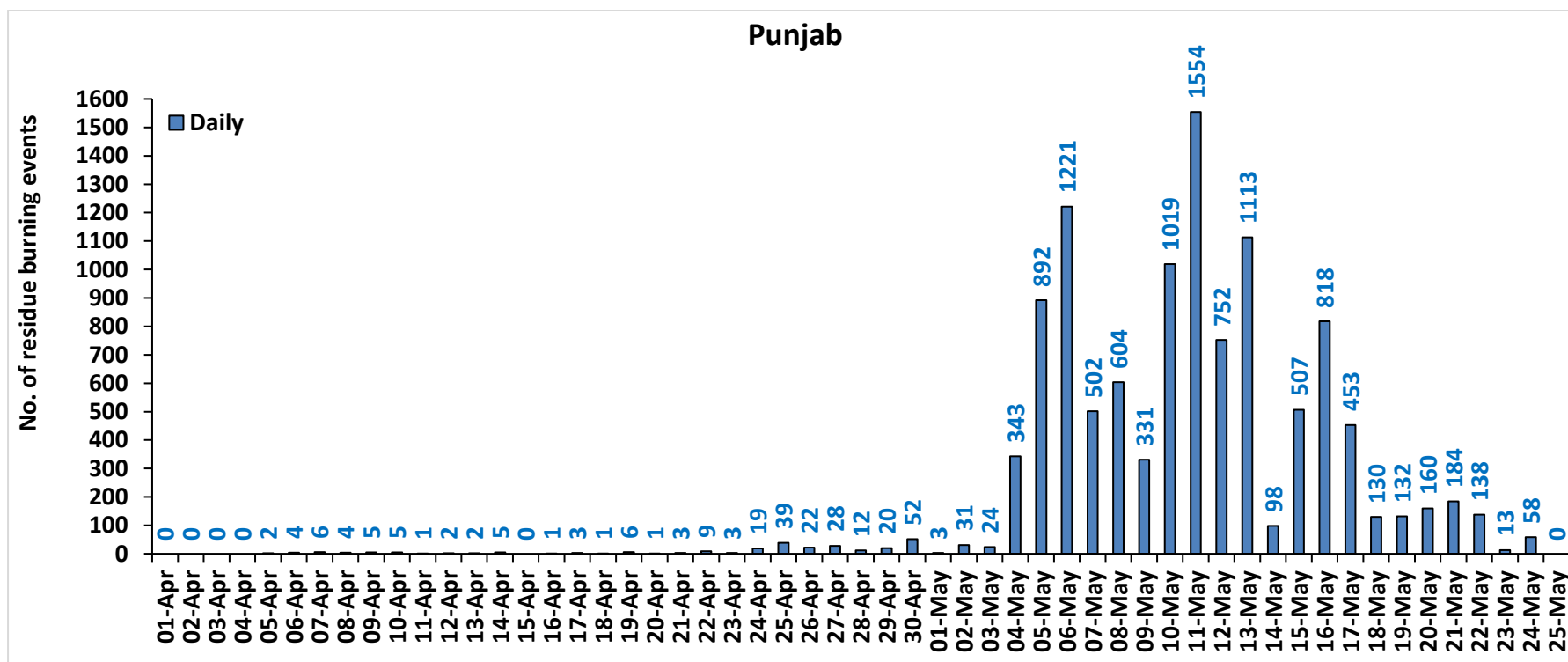
**Consortium for Research on Agroecosystem Monitoring and Modeling from Space (CREAMS) Laboratory,
Division of Agricultural Physics, ICAR – Indian Agricultural Research Institute, New Delhi – 110012**

<http://creams.iari.res.in/cms2/>

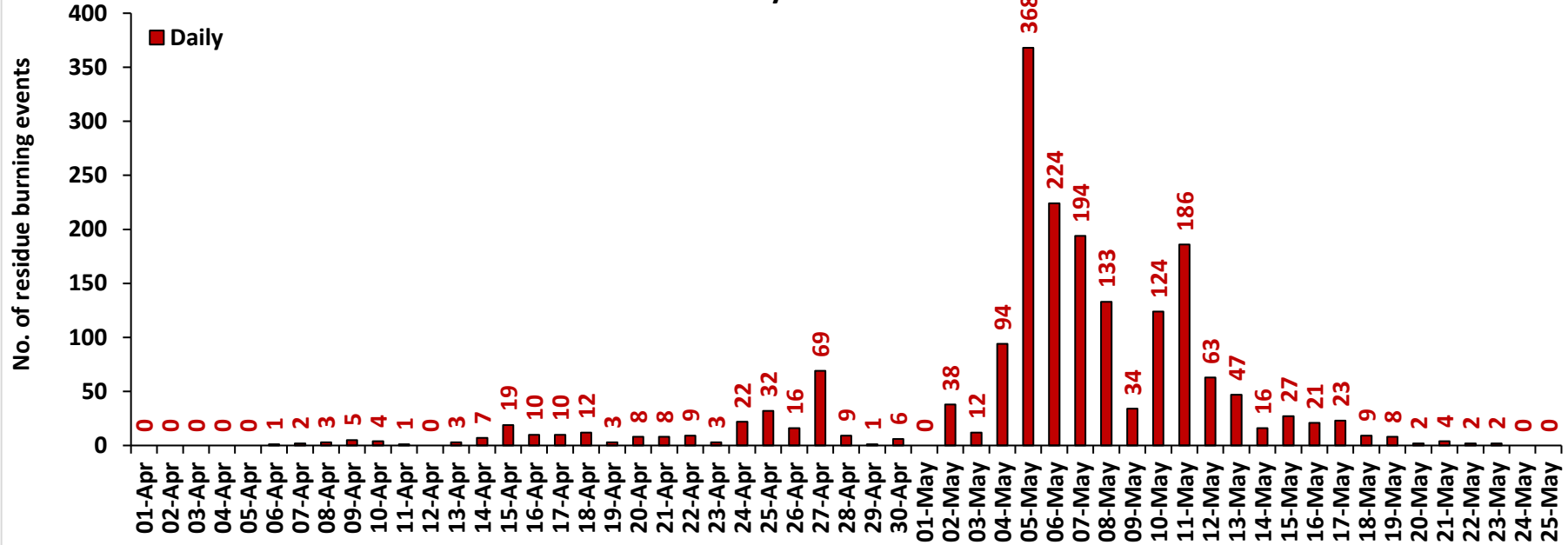
Highlights for 25-May-2023

- The active fire events due to wheat residue burning were monitored using satellite remote sensing, following the new "Standard Protocol for Estimation of Crop Residue Burning Fire Events using Satellite Data".
- Satellites detected **18** residue burning events in the five study States on 25-May-2023.
- The state wise events detected on 25-May-2023 were **00** in Punjab, **00** in Haryana, **00** in Delhi, **00** in Uttar Pradesh and **18** in Madhya Pradesh.
- The number of events has decreased from **95** on 24-May-2023 to **18** on 25-May-2023 in the five study states.
- Total **38373** burning events were detected in the five states between 01-Apr-2023 and 25-May-2023, which are distributed as **11335**, **1894**, **6398**, **05**, and **18741** in Punjab, Haryana, UP, Delhi, and MP, respectively.

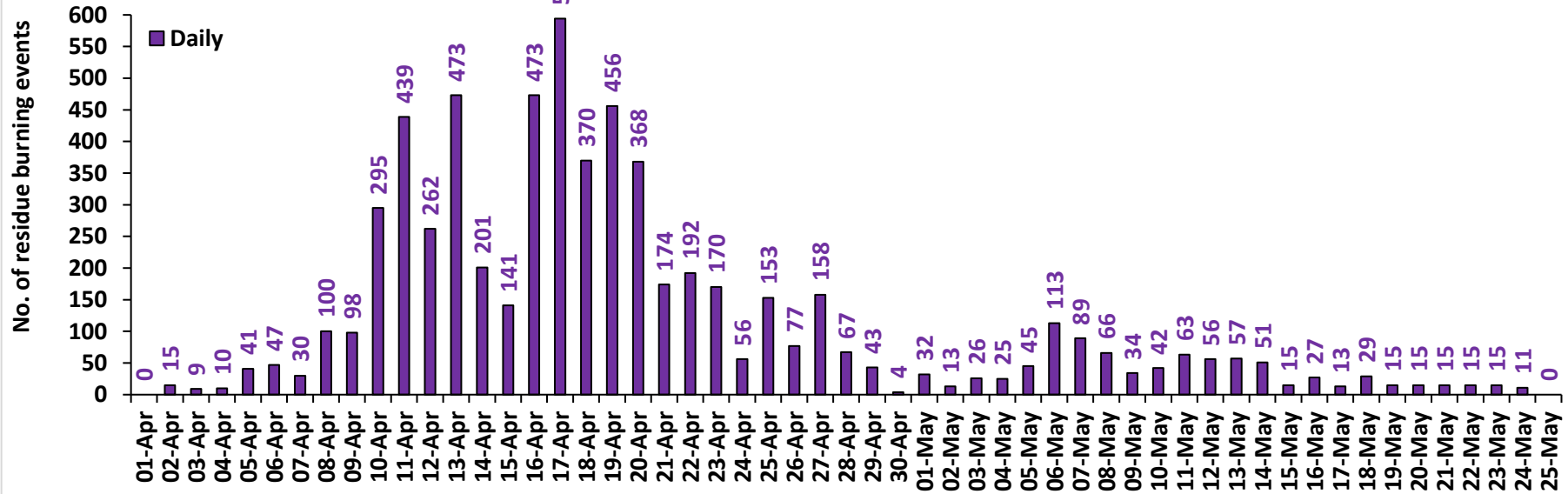
Temporal distribution of wheat residue burning events for the study States in 2023

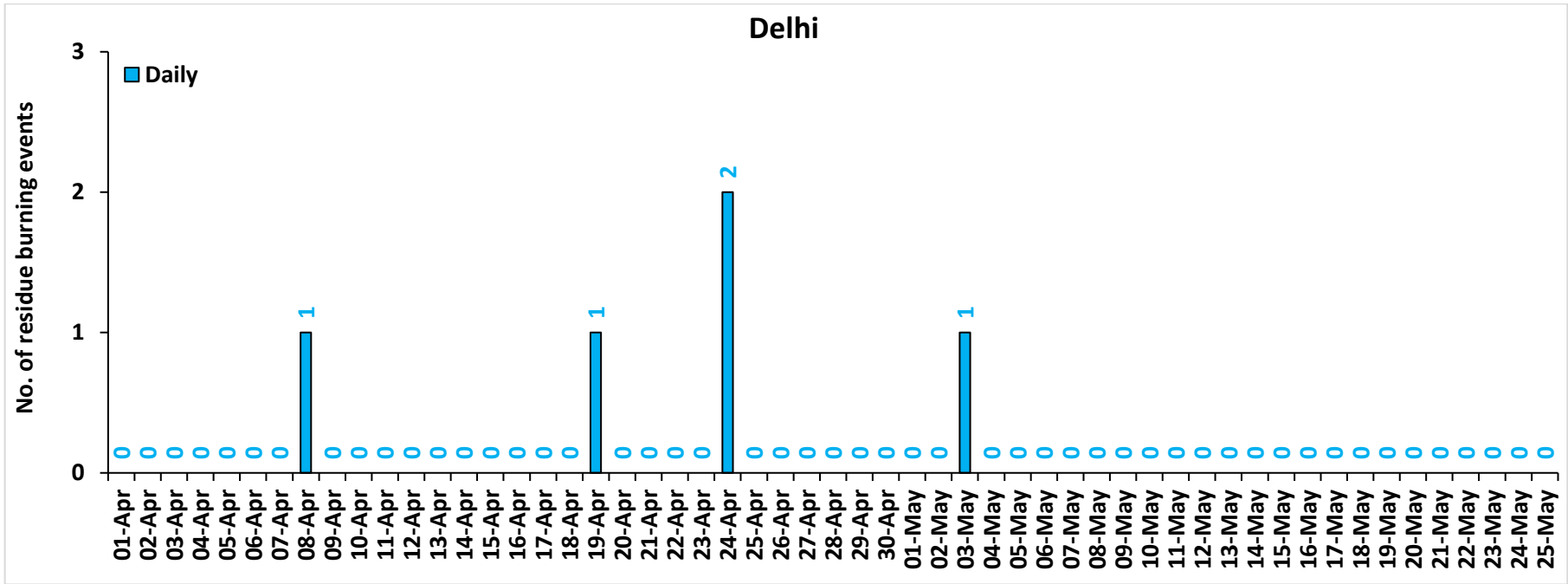
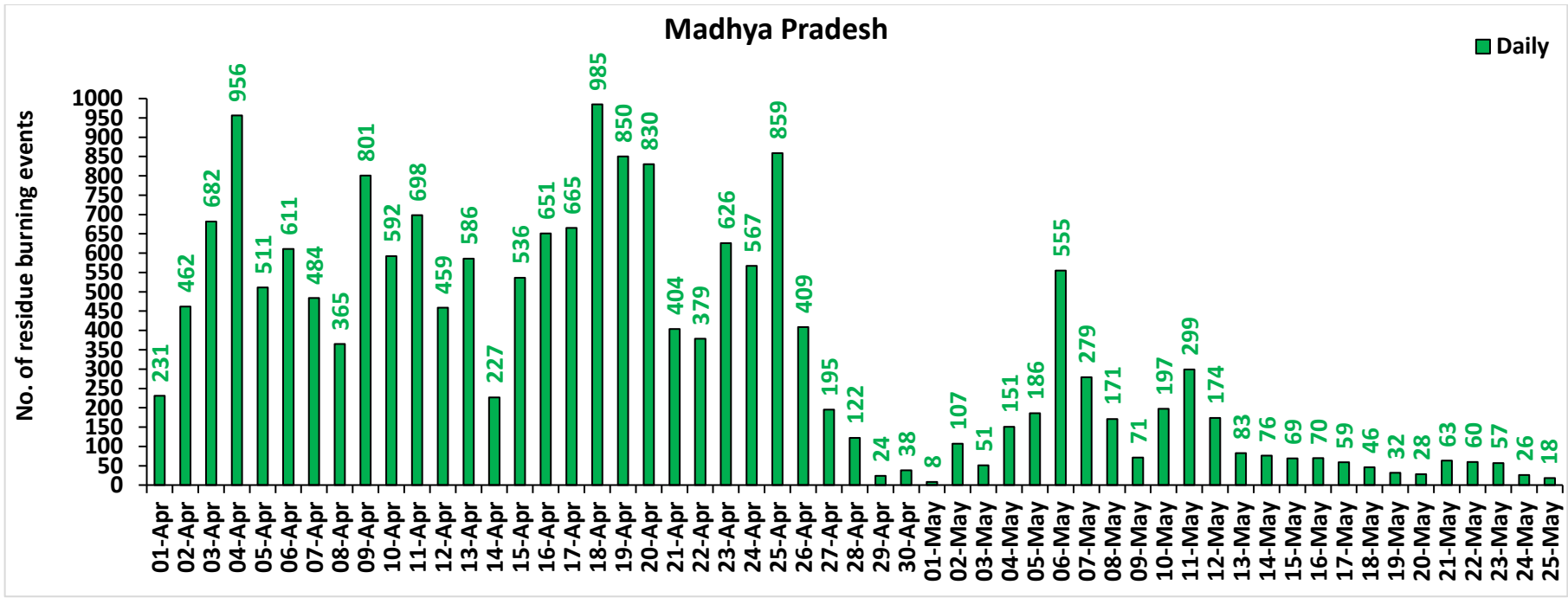


Haryana

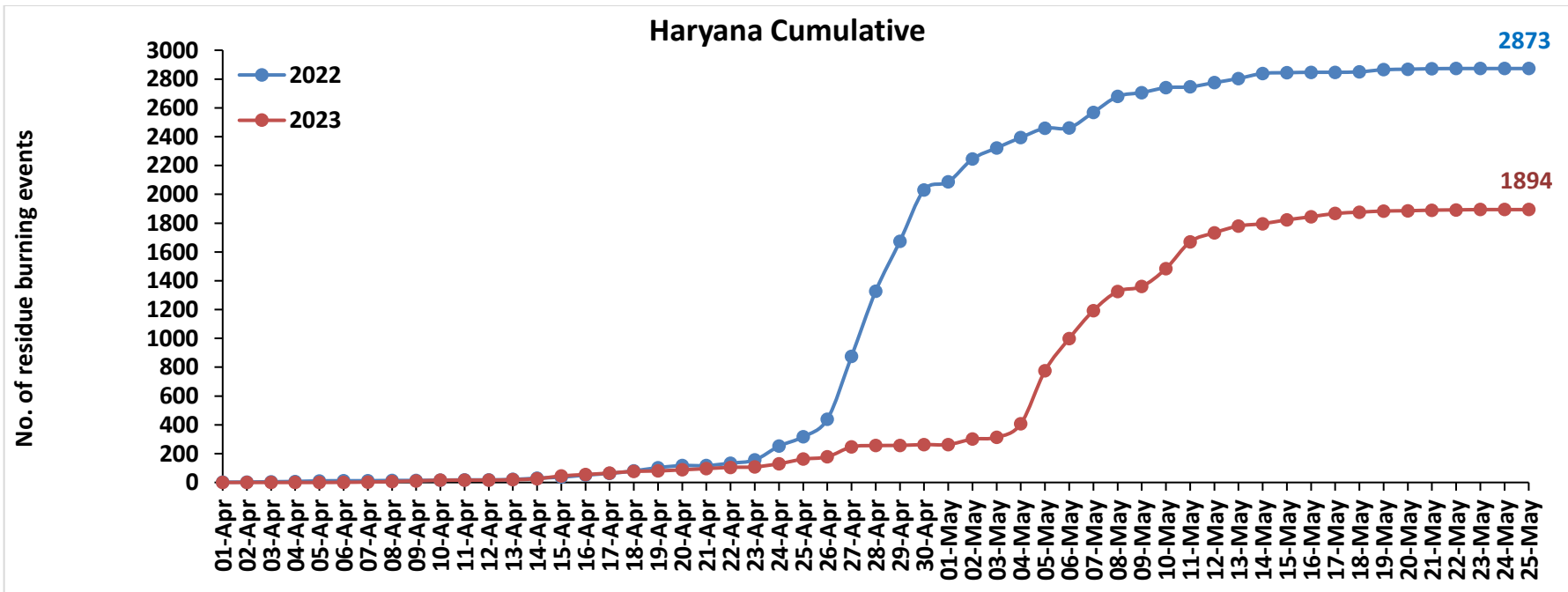
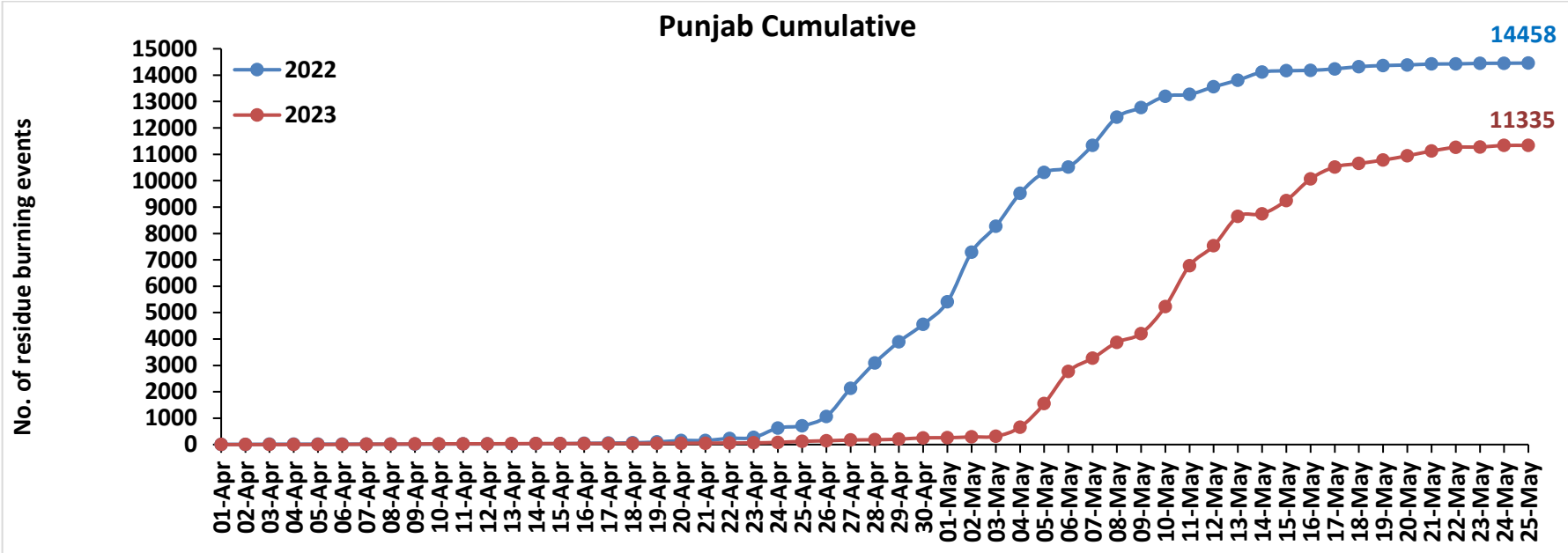


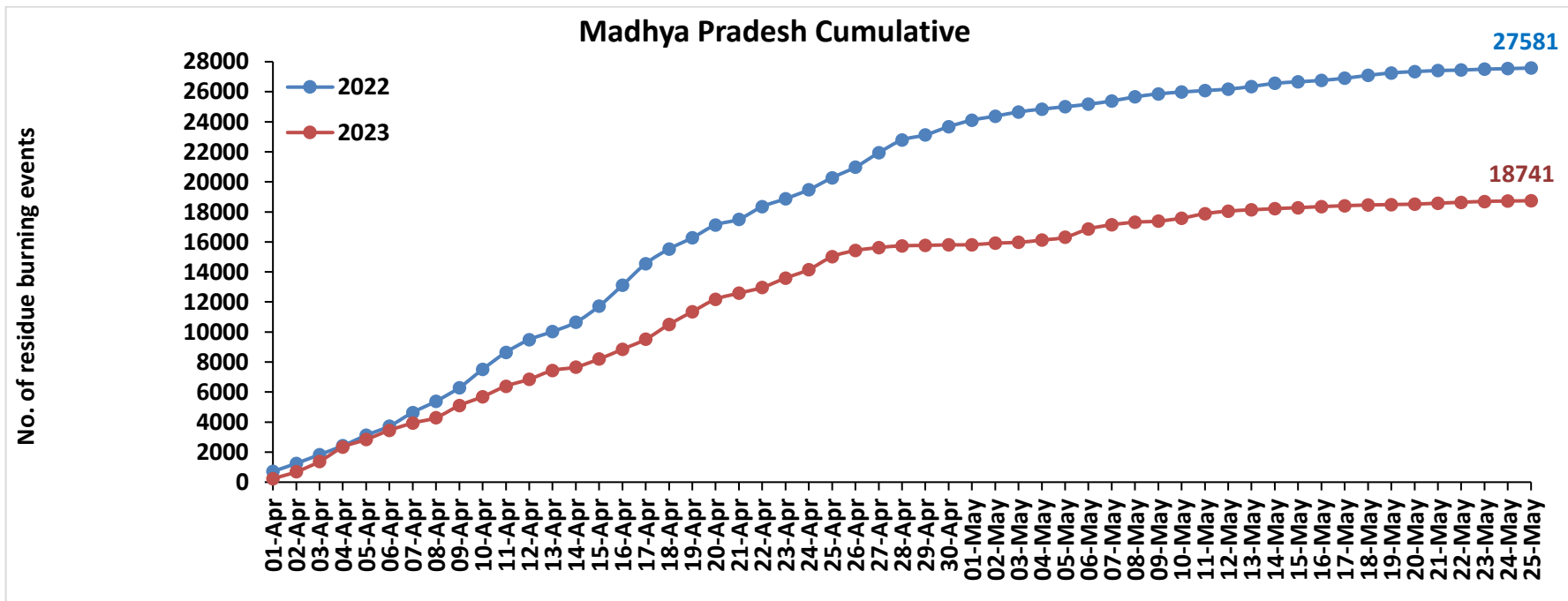
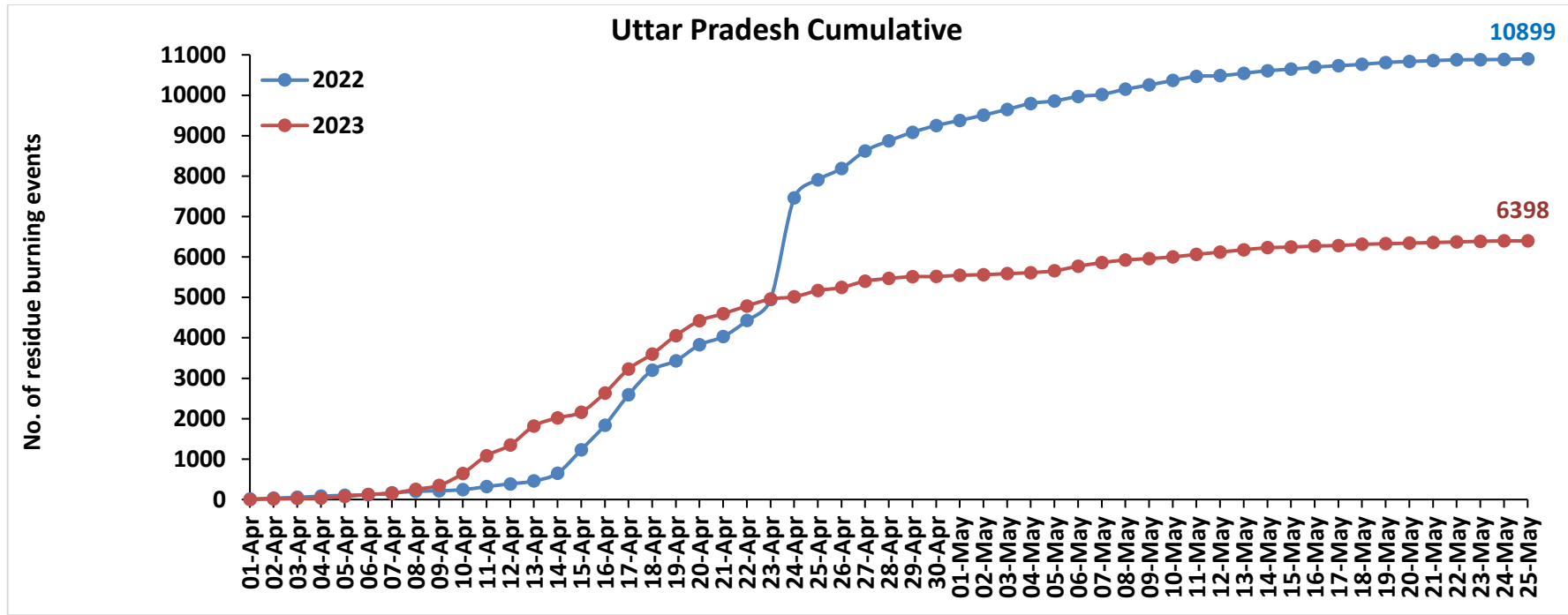
Uttar Pradesh



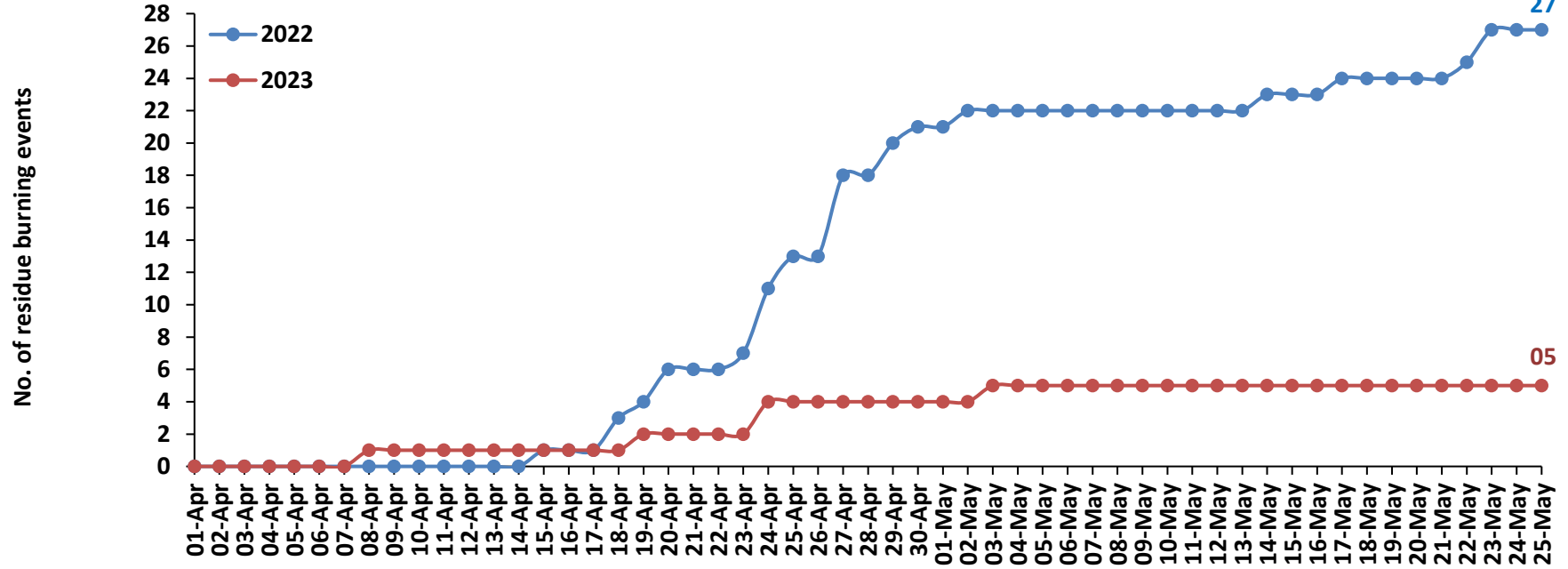


Comparison of residue burning events in current year (2023) with previous year (2022) for the study States





Delhi Cumulative



District-wise cumulative number of wheat residue burning events detected in 2022 and 2023
(Period: 01 April-25 May)

(a) Punjab

District	01 Apr-25 May	
	2022	2023
Amritsar	1241	870
Barnala	472	542
Bathinda	829	586
Faridkot	525	464
Fatehgarh Sahib	72	139
Fazilka	527	385
Firozpur	1427	899
Gurdaspur	1124	950
Hoshiarpur	479	410
Jalandhar	825	617
Kapurthala	724	500
Ludhiana	946	886
Mansa	412	333
Moga	1099	1010
Muktsar	728	587
Pathankot	167	92
Patiala	457	427
Rupnagar	74	41
Sangrur	1011	817
SAS NAGAR (Mohali)	27	11
SBS Nagar	220	184
Tarn Taran	1072	585
Total	14458	11335

(b) Haryana

District	01 Apr-25 May	
	2022	2023
AMBALA	93	82
BHIWANI	76	24
CHARKHI DADRI	10	8
FARIDABAD	17	16
FATEHABAD	274	268
GURGAON	7	9
HISAR	150	113
JHAJJAR	121	66
JIND	346	156
KAITHAL	306	190
KARNAL	382	227
KURUKSHETRA	140	57
MAHENDRAGARH	0	0
MEWAT	1	8
PALWAL	33	28
PANCHKULA	3	3
PANIPAT	218	110
REWARI	3	3
ROHTAK	211	94
SIRSA	186	259
SONIPAT	274	133
YAMUNANAGAR	22	40
Total	2873	1894

(c) Uttar Pradesh

District	01 Apr-25 May							
	2022	2023	GAUTAMBUDHNAGAR	29	24	MUZAFARNAGAR	55	33
			GAZIPUR	108	48	PILHIBHIT	326	65
AGRA	2	0	GHAZIABAD	13	10	PRATAPGARH	24	15
ALIGARH	19	33	GONDA	22	29	RAIBEARELI	102	17
ALLAHABAD	111	43	GORAKHPUR	975	368	RAMPUR	117	33
AMBEDKARNAGAR	11	13	HAMIRPUR	18	42	SANTKABIRNAGAR	695	430
AURAIYA	105	15	HARDOI	115	80	SANTRAVIDASNAGAR	1	3
AZAMGARH	90	76	JALAUN	26	21	SHAHJAHANPUR	347	104
BADAUN	9	8	JAUNPUR	22	8	SHARANPUR	32	21
BAGHPAT	7	3	JHANSI	108	142	SHRAWASTI	86	43
BAHRAICH	109	46	JYOTIBAPHULE NAGAR	9	5	SIDDHARTHANAGAR	2539	1852
BALLIA	155	205	KANNAUJ	0	1	SITAPUR	24	25
BALRAMPUR	245	97	KANPUR	13	4	SONBHADRA	129	43
BANDA	10	6	KANPUR DEHAT	32	25	SULTANPUR	60	30
BARABANKI	10	3	KAUSHAMBI	8	6	UNNAO	70	19
BAREILLY	114	22	KHERI	163	78	VARANASI	2	0
BASTI	432	226	KUSHINAGAR	224	95	Total	10899	6398
BIJNOR	54	28	LACKNOW	13	2			
BULANDSAHAR	8	11	LALITPUR	69	72			
CHANDAULI	293	62	MAHAMAYANAGAR	0	1			
CHITRAKOOT	24	3	MAHARAJGANJ	1495	977			
DEORIA	732	440	MAHOBA	6	45			
ETAH	2	7	MAINPURI	6	8			
ETAWAH	3	5	MATHURA	24	54			
FAIZABAD	7	12	MAU	88	64			
FARRUKHABAD	3	2	MEERUT	20	26			
FATEHPUR	47	35	MIRZAPUR	73	15			
FIROZABAD	1	0	MORADABAD	8	14			

(d) Madhya Pradesh

District	01 Apr-25 May				
	2022	2023			
			PANNA	181	75
ALIRAJPUR	0	0	RAISEN	2648	1673
ANUPPUR	35	3	RAJGARH	162	183
ASHOKNAGAR	647	232	RATLAM	200	292
BALAGHAT	29	1	REWA	198	76
BARWANI	7	8	SAGAR	780	586
BETUL	208	63	SATNA	1014	255
BHIND	74	70	SEHORE	952	655
BHOPAL	972	495	SEONI	1531	817
BURHANPUR	12	4	SHAHDOL	111	9
CHHATARPUR	166	176	SHAJAPUR	413	550
CHHINDWARA	532	267	SHEOPUR	379	452
DAMOH	219	255	SHIVPURI	198	121
DATIA	393	288	SIDHI	32	5
DEWAS	585	569	SINGRAULI	130	3
DHAR	1012	884	TIKAMGARH	43	86
DINDORI	45	5	UJJAIN	1249	1788
EAST NIMAR	83	108	UMARIA	63	15
GUNA	767	397	VIDESHA	3749	1746
GWALIOR	621	397	WEST NIMAR	41	73
HARDA	402	277	Total	27581	18741
HOSHANGABAD	4066	2757			
INDORE	971	1010			
JABALPUR	895	486			
JHABUA	2	7			
KATNI	310	152			
MANDLA	182	49			
MANDSAUR	68	113			
MORENA	50	62			
NARSHIMAPURA	133	104			
NIMACH	21	42			

(e) Delhi

District	01 Apr-25 May	
	2022	2023
CENTRAL	0	0
EAST	0	0
NEW DELHI	0	0
NORTH	22	2
NORTH EAST	1	0
NORTH WEST DELHI	1	0
SHAHADRA	0	0
SOUTH	1	0
SOUTH EAST	0	0
SOUTH WEST DELHI	1	2
WEST DELHI	1	1
Total	27	5

State-wise and date-wise number of wheat residue burning events detected in 2022 and 2023
(Period: 01 April-25 May)

Date	Punjab		Haryana		Uttar Pradesh		Delhi		Madhya Pradesh	
	2022	2023	2022	2023	2022	2023	2022	2023	2022	2023
01-Apr	6	0	2	0	10	0	0	0	715	231
02-Apr	1	0	1	0	22	15	0	0	531	462
03-Apr	3	0	2	0	21	9	0	0	589	682
04-Apr	2	0	2	0	29	10	0	0	589	956
05-Apr	2	2	4	0	21	41	0	0	698	511
06-Apr	0	4	1	1	16	47	0	0	612	611
07-Apr	0	6	0	2	46	30	0	0	908	484
08-Apr	1	4	2	3	37	100	0	1	749	365
09-Apr	0	5	0	5	16	98	0	0	907	801
10-Apr	4	5	2	4	24	295	0	0	1217	592
11-Apr	2	1	2	1	78	439	0	0	1129	698
12-Apr	0	2	0	0	67	262	0	0	847	459
13-Apr	3	2	3	3	70	473	0	0	537	586
14-Apr	7	5	9	7	193	201	0	0	618	227
15-Apr	1	0	7	19	579	141	1	0	1079	536
16-Apr	13	1	14	10	609	473	0	0	1390	651
17-Apr	10	3	12	10	751	594	0	0	1441	665
18-Apr	12	1	17	12	611	370	2	0	972	985
19-Apr	29	6	23	3	231	456	1	1	748	850
20-Apr	56	1	14	8	395	368	2	0	856	830
21-Apr	4	3	0	8	202	174	0	0	379	404
22-Apr	77	9	17	9	398	192	0	0	839	379
23-Apr	35	3	22	2	519	170	1	0	524	626
24-Apr	360	19	96	22	2515	56	4	2	605	567
25-Apr	82	39	65	32	450	153	2	0	796	859

26-Apr	354	22	122	16	277	77	0	0	706	409
27-Apr	1064	28	436	69	436	158	5	0	955	195
28-Apr	965	12	453	9	249	67	0	0	849	122
29-Apr	802	20	345	1	213	43	2	0	340	24
30-Apr	662	52	357	6	166	4	1	0	547	38
01-May	848	3	56	0	126	32	0	0	437	8
02-May	1887	31	159	38	132	13	1	0	265	107
03-May	979	24	77	12	141	26	0	1	283	51
04-May	1247	343	72	94	147	25	0	0	188	151
05-May	796	892	65	368	64	45	0	0	159	186
06-May	202	1221	2	224	107	113	0	0	166	555
07-May	827	502	108	194	52	89	0	0	215	279
08-May	1065	604	110	133	130	66	0	0	275	171
09-May	357	331	27	34	103	34	0	0	199	71
10-May	437	1019	34	124	113	42	0	0	123	197
11-May	67	1554	6	186	101	63	0	0	99	299
12-May	289	752	29	63	17	56	0	0	94	174
13-May	253	1113	29	47	60	57	0	0	173	83
14-May	306	98	35	16	63	51	1	0	214	76
15-May	49	507	5	27	38	15	0	0	99	69
16-May	16	818	3	21	49	27	0	0	98	70
17-May	55	453	0	23	37	13	1	0	143	59
18-May	85	130	3	9	34	29	0	0	187	46
19-May	42	132	15	8	46	15	0	0	167	32
20-May	22	160	3	2	24	15	0	0	86	28
21-May	35	184	4	4	21	15	0	0	69	63
22-May	5	138	1	2	21	15	1	0	35	60
23-May	20	13	0	2	3	15	2	0	58	57
24-May	6	58	0	0	7	11	0	0	36	26
25-May	6	0	0	0	12	0	0	0	41	18

Total	14458	11335	2873	1894	10899	6398	27	5	27581	18741
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Details of wheat residue burning events in Madhya Pradesh on 25-May-2023

S. No.	District	Tehsil / Block	Satellite	Latitude	Longitude	ACQ_TIME	Day / Night	Fire Power (W/m2)
1	BHOPAL	BERASIYA	S-NPP	23.46686	77.47330	02:08:17	N	3.40
2	DHAR	BADNAWAR	S-NPP	23.11723	75.24432	13:17:34	D	2.10
3	GUNA	GUNA	S-NPP	24.74267	77.29778	13:17:34	D	18.40
4	GUNA	RAGHOGARH	S-NPP	23.99220	77.26173	02:08:17	N	0.80
5	HARDA	KHIRKIYAN	S-NPP	22.21831	76.93124	02:08:17	N	0.70
6	JABALPUR	SAHPURA	AQUA	23.19300	79.57400	13:53:13	D	12.60
7	JHABUA	PETLAWAD	S-NPP	22.92197	74.79079	13:17:34	D	6.30
8	MANDSAUR	MANDSAUR	S-NPP	24.06032	75.01408	02:08:17	N	0.70
9	MORENA	KAILARAS	S-NPP	26.23188	77.58704	13:17:34	D	10.50
10	MORENA	KAILARAS	AQUA	26.34100	77.69000	13:53:13	D	11.60
11	NARSHIMAPURA	GOTECAON	S-NPP	22.94989	79.52447	02:08:17	N	1.00
12	RAJGARH	BIYAVRA	S-NPP	23.85931	77.13918	13:17:34	D	9.60
13	RAJGARH	JIRAPUR	S-NPP	24.14627	76.27064	13:17:34	D	7.40
14	REWA	HANUMANA	S-NPP	24.73002	81.94296	13:17:34	D	3.10
15	SEONI	KEWLARI	S-NPP	22.39064	79.88171	02:08:17	N	2.10
16	SHAJAPUR	BAROUD	S-NPP	23.73878	75.82404	02:08:17	N	0.60
17	SHAJAPUR	GULNA	S-NPP	23.29435	76.38364	02:08:17	N	1.90
18	TIKAMGARH	BALDEOGARH	S-NPP	24.85851	79.19169	02:08:17	N	1.60

The study used data received from following Satellites at NRSC Ground Station

S. No.	Satellite Name	Sensor	Resolution (meter)	Day / Night Passes
1.	Suomi NPP	VIIRS	375 / 750	Both
2.	Terra	MODIS	1000	Both
3.	Aqua	MODIS	1000	Both

**The wheat mask for the Punjab, Haryana and Uttar Pradesh were provided by MNCFC, MoA&FW, Govt of India
The rabi crop mask for Delhi and Madhya Pradesh were provided by NRSC**

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GIS Maps of fire events can be visualized online on ICAR KRISHI Geoportal website: <http://geoportal.icar.gov.in:8080/geoexplorer/composer/>
(Part of KRISHI Portal: <https://krishi.icar.gov.in> initiative)
